

A Study of Factors Influencing Prognosis in Perforated Peptic Ulcer.

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ABSTRACT

Background: Aim: Peptic perforation is one of the commonest surgical emergencies met with but due to poor socioeconomic status, lack of health consciousness and want of diagnostic & treatment facilities at the peripheral healthcare level, they present considerably late most of the time. Our aim was to study the factors affecting prognosis.

Methods: A prospective review was made in all charts of parameters between the period June 2014 to Dec 2016. After admission detailed history was elicited from the patient and a thorough clinical examination was done and the available investigations were done to approach at the diagnosis. Long term follow up was done & patients lost to follow up were excluded from the study. **Results:** Gas was present under one or both domes of the diaphragm in 76 (89.4%) cases. In rest 9 (10.6%) cases no free gas under diaphragm was seen. In 77 cases (91.7%) perforation was present in the first part of duodenum (anterior or superior wall). 7 cases (8.3%) had perforation in the pyloric region. 25.7% cases had 1-5 mm size, 35.3% cases had 6-10 mm and 77 % cases had perforation more than 10 mm diameter respectively. **Conclusion:** Hence from the ongoing discussions it may be concluded that; a common surgical emergency called 'perforated peptic ulcer' is associated with a significant mortality. As the variables like age, perforation size and site, co-existent medical diseases are not changeable. It is early intervention that holds the key to lower the mortality of this otherwise fatal condition.

Keywords: Peptic Ulcer, Perforation.

INTRODUCTION

Perforation of peptic ulcer is one of the most dreaded complications which demands emergency surgical intervention virtually in every case. With a lot of lights already thrown on various aspects of this disease and with modern days safe anaesthesia & highly effective antibiotics.^[1] Today though the outlook is not that gloomy, still the so called complete cure for every patient' and individualisation of treatment modalities for each patient has eluded the surgeons. Today with a more critical appreciation of various aspects of this disease, it has been possible to achieve high cure rates in surgical management of perforated peptic ulcer. But still, diagnosing the condition early in its presentation, preventing or alleviating pre-operative shock and recognising concurrent medical illnesses holds the key to such good outcomes. Earlier, irrespective of the state of presentation; simple closure with omental patch was the standard accepted surgical practice.^[2] But keeping the natural course of the disease in mind and considering the post-operative complications in such cases the balance has tilted in favour of definitive approach over the last two decades. Hence surgical procedures like, truncal vagotomy with gastro jejunostomy of pyloroplasty, parietal cell vagotomy and partial

gastrectomy have emerged as the' more preferable modalities in the treatment protocol of this disease as these procedures take care of original disease process.^[3] In this Institution, simple closure is done in patients with risk factors ; definitive procedures being, undertaken where the condition of the patient is suitable and stable. In our Institution, peptic perforation is one of the commonest surgical emergencies met with but due to poor socioeconomic status, lack of health consciousness and want of diagnostic & treatment facilities at the peripheral healthcare level, they present considerably late most of the time.

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MATERIALS AND METHODS

This study has been taken up on the cases of perforated peptic ulcer that have been admitted from casualty, Surgical O.P.D and also on perforation that have arisen as a complication while the patient was in the hospital for surgical treatment of peptic ulcer or taking medicinal treatment in medical ward. The

patients who were operated for some other indications and found to have peptic perforation were also included in the study. A prospective review was made in all charts of parameters between the period June 2014 to Dec 2016. After admission detailed history was elicited from the patient and a thorough clinical examination was done and the available investigations were done to approach at the diagnosis. Long term follow up was done & patients lost to follow up were excluded from the study. All the cases of perforated peptic ulcer were examined under the following proforma, Name, Age, Sex, Address, Occupation, regd. No., Date of admission and discharge/death, period of stay, complications, if any. The presenting complains with their time and duration were recorded in chronological order: pain, vomiting. The time of perforation was taken as suggested by sudden onset of abdominal pain. Duration of perforation denotes time from perforation to start of operation. Past history of Acid peptic disease, if present the duration & treatment received if any, ingestion of ulcerogenic drugs, alcohol, steroids, anti-arthritis, analgesics etc., associated other illness (relating to the organ systems viz. HTN, DM, IHD, PTB etc.) Socio-economic status, single/married, addiction (Alcohol/smoking/Tobacco), dietary habit (type of diet and regularity Facial expression, Tongue, Anaemia, Pulse, Temperature, Blood Pressure, Respiration, other systems. All the cases were examined thoroughly eg. Inspection, Palpation, Percussion, Auscultation, per rectal digital examination, to arrive at a definite clinical diagnosis with an eye to exclude the other acute abdominal conditions by differential diagnosis.

Investigations

- 1) Blood - CBC, Blood sugar, Blood urea, Serum Creatinine & Bilirubin. Electrolytes, Serum Protein, Blood grouping & Rh typing in selected cases.
- 2) Urine - Routine & microscopic examination Culture & sensitivity if needed.
- 3) Plain X-Ray of abdomen - In erect posture including both domes of diaphragm/lateral decubitus.
- 4) Abdominal four quadrant paracentesis
- 5) Peritoneal fluid culture was done in all cases.

Diagnosis

Diagnosis was made by history and typical physical findings of peptic perforations; reinforced by investigations like plain X Ray of abdomen in erect posture and four quadrants peritoneal tap.

Pre-Operative Measures

After assessing the patient, early resuscitation was done by intravenous fluid infusion depending on individual case. Nasogastric aspiration & a broad spectrum antibiotic was started. All patients received an injection of 0.5ml of Tetanus toxoid on

admission. The condition of the patient was reviewed at frequent intervals.

Operative Findings

After the patient was fully resuscitated, laparotomy was done by an upper midline or right upper paramedian incision under General Anaesthesia and the time of operation & operative findings were noted.

- 1) Peritoneal contents — bilious, fibrinous flakes, food particles, pus
- 2) Characteristics of the ulcer — Site, size, sealed or not, associated pathology in the form of bleeding, stenosis or malignancy

Procedure

Except very few critically ill patients almost all the cases were exposed for-surgical treatment. In patients undergoing surgery, perforation was closed with sutures (Vitryl 2.0) followed by omental patch. Primary definitive surgery (in the form of TV+GJ alone) was done in selected cases according to the following criteria: Patients fit to undergo a major surgical procedure, no frank pus in the peritoneum on laparotomy, Patients with outlet obstruction or in whom closure of perforation was to produce obstruction, Evidence of chronic duodenal ulcer in the form of history of ulcer dyspepsia of more than 3 months and/or fibrosis and scarring in pyloroduodenal region. Thorough peritoneal toileting was done & flank drainage in form of corrugated PVC drain was given in all cases.

Post-Operative Management

Patients were watched for recovery from anaesthesia and vital parameters were recorded at frequent intervals. Intravenous fluids were administered according to the requirement of the patients and antibiotics eg. ciprofloxacin, metronidazole started. Frequent Ryles tube aspiration was done to decompress the upper G.I tract. Daily thorough examination was done. Ryles tube was removed and oral fluids encouraged on return of bowel sounds usually after 48-72 hrs. Patients were encouraged for early ambulation & respiratory exercise. Any complication during this period was recorded and managed accordingly. After removal of stitches patients were discharged if found fit with the advice to attend the hospital for follow up.

RESULTS

AGE

In our series of 85 cases the highest incidence of peptic perforation was in the age group of 41 — 50 years being 28 (33.0%), next was in age group 51-60 yrs. Being 19(22.3%) and third was 31- 40 years i.e. 18 (21.2%). No case of perforation was recorded below 21 years and above 75 years in the series. The youngest patient was of 22 years and oldest of 75

years. Mortality increases with increasing age i.e. 47.1% in 41- 50 years age group to 25% in 61-70 years age group and 100% above 70 years of age. Sex: In our series of 85 cases 77 (90.6%) were males and 8 (9.4%) were females but the female mortality (12.5%) is more than the male mortality.

Socio-Economic Status: The highest incidence was recorded in the poor socio-economic status group (69.4%).

Previous Ulcer History: Previous history of peptic ulcer ranging from 1 to 15 years was present in 49 cases (57.6%) in this study, 36 patients (42.4%) has no previous ulcer history. Time interval between perforation and operation, and its effect on mortality thereof: In our study in majority (63.5%) of the patients duration of perforation ranged from 25-72 hrs. This delay in presentation affects the ultimate outcome. There was no death within 12 hrs and after that mortality rate increased steadily to attain 33.3% by 6-9 days. One patient who had died within 24 hrs of presentation had associated heart disease (MS, MR, CHF) and died before getting operated.

Number of cases with free gas under diaphragm: Plain X-ray Abdomen was taken in erect posture prior to operation to confirm the diagnosis. Gas was present under one or both domes of the diaphragm in 76 (89.4%) cases. In rest 9 (10.6%) cases no free gas under diaphragm was seen. **Site of perforation:** In 77 cases (91.7%) perforation was present in the first part of duodenum (anterior or superior wall). 7 cases (8.3%) had perforation in the pyloric region. **Size of Perforation:** Out of the 84 cases undergoing laparotomy 2 cases had sealed perforation, so size could not be assessed. Majority 69 (82%) had perforation size ranging 3-10mm. 13 (15.5%) cases had perforation size more than 10mm. Maximum size of perforation which was observed in our series was 16 mm.

Size of perforation and related mortality & morbidity: It was observed that mortality and immediate post-operative morbidity in the form of complication and hospital stay (> 14 days) increased with increase in diameter of perforation.

Size of perforation and related mortality & morbidity: 25.7% cases had 1-5 mm size, 35.3% cases had 6-10 mm and 77 % cases had perforation more than 10 mm diameter respectively. This association may not be absolute because other factors like age, duration of perforation preoperative shock, medical illness also come into play.

Peritoneal fluid culture: Positive culture was obtained in 48 (56.5%) cases. Type of organisms found out were E. Coli, Klebsiella, Proteus, Streptococcus & Staphylococcus. Majority cases had polybacterial group, gram negative culture was the highest 17 (35.4%). Next in order were both gram +ve & gram -ve and then gram +ve only.

Frequency of positive culture with passage of time: Only 25% of cultures were positive in patients with duration of perforation less than 12 hrs which

increase to 31.3% in patients with duration of perforation thin 13-24 hrs, whereas positivity approached 100% in patients coming after 5 days. Relationship between culture and mortality: Majority (62.5%) in the mortality group had positive culture and all had polybacterial flora. In 37.5% cases there was mortality in spite of negative culture status.

Effect of preoperative shock and coexistent medical illness on mortality: Out of the total 85 patients 22 (25.9%) patients had preoperative shock. In our series, 8 patients who died, all of them had preoperative shock (36.36%).

Patients with major coexistent medical illness and related mortality: Out of the 3 (3.5%) patients having cardiovascular disease 2 (66.7%) died. One had severe degree of hypertension and other had MS, MR, CHF. Three patients had respiratory disease in form of COPD and Br. Asthma. Two patients had both CVS & Respiratory diseases both of whom died.

The number of cases treated by different procedures and the mortality there of: In our series only one case (1.2%) was treated conservatively. Due to severe degree of shock and associated medical illness. The patient died within 24 hrs of presentation to the hospital.

- Four types of operative procedure were employed in rest 84 (98.8%) cases.
- In 2 (2.4%) cases only toileting was done as the perforation was sealed. There was no mortality.
- In 46 (54.1%) cases simple closure of perforation with omental patch and peritoneal toileting and bilateral flank drainage was done. In this group 6 (13.0%) cases died.
- In 11 (12.9%) cases closure of perforation followed by gastrojejunostomy was done. This procedure was applied in old patient died in this group.
- In rest 25 (29.4%) cases closure followed by Truncal vagotomy and gastrojejunostomy was done. This procedure was done in suitable and stable patients without any risk factor. There was no mortality in this group.

Overall mortality in definitive surgery group was 1 out of 36 (2.8%) whereas mortality in those undergoing simple closure was 6 out of 46 (13.1%). [Table 1]

Relationship between the duration of perforation with different surgical procedures: Out of 36 cases who had undergone definitive surgery in 23 (63.9%) case the perforation was of more than 24 hrs duration with only 1 (4.3%) mortality. In these cases, patients had a stable haemodynamic status which is very important rather than duration of perforation.

Status of operating surgeon versus mortality: Mortality is 10.5% in the group of cases operated by junior resident, 7 % in cases operated by senior resident surgeons and 12.5% in cases operated by consultants. Consultant's participation was limited to a small number of complicated cases only.

Table: 1 Showing Post-Operative Complications in Different Treatment Groups.

SL No.	Complication	Defective Surgery		Simple closure	
		No. of cases	%	No. of cases	%
1	Fever > 3 days	2	5.6.	4	8.3
2	Chest infection	7	5.6	3	6.3
3	Post-operative shock	-	-	3	6.3
4	Wound infection	4	11.1	5	10.4
5	Wound Dehiscence	1	2.8	2	4.2
6	Biliary Fistula	2	5.6	5	10.4
7	Diarrhoea	1	2.8	4	8.3
8	Post-operative obstruction	-	-	1	2.1
	Total	12	33.3	28	58.3

Table: 2 Showing Duration of Hospital Stay In Different Treatment Groups.

SL No.	Hospital stay	Definitive surgery	Simple Closure	Peritoneal toileting
1	7-14 days	27	24	2
2	15-21 days	7	11	-
3	22-28 days	1	5	-
	Total	35	40	2

Follow UP

Patients undergoing definitive surgery were followed up and result assessed according to the Visick's grading system (Goligher's modification 1968).

Grade - I - System free-excellent result

Grade -II - Mild occasional systems controlled by minor adjustment in the diet-good result

Grade -III - Mild or moderate symptoms not controlled by diet but not seriously interfering with day-to-day work - satisfactory result.

Grade- IV - Moderate or severe symptoms or recurrence - Poor Result.

Out of 35 cases 26 (74.3%) cases have been classified to be having excellent result, 8 (22.9%) having good result, and 1 (2.8%) patient having satisfactory result till date.

Forty-two patients underwent either simple closure or conservative treatment and were given H2 Blockers or proton pump inhibitors post operatively and after discharge. They are being followed up till date and their complaints being noted under various headings viz. relapse of ulcer symptoms, haematemesis/ melena, pyloric stenosis and reperforation.

Follow up of patients undergoing simple closure/ conservative treatment: Seventeen patients (40.5%) had relapse of ulcer symptoms within this period of follow up, out of which 7 cases underwent definitive ulcer cure surgery. Rest 10 cases put on medical management. 1 (2.4%) patient had pyloric stenosis, both of them underwent definitive surgery. [Table 2]

DISCUSSION

The present study is confined to 85 cases of perforated peptic ulcer who were treated in our Hospital from July 99 to June 2001, out of which. Males: Females - 9.62: 1, This male preponderance was marked by all workers. Age incidence peak - 41-50 yrs. Feliciano (1992) and Dev (1994) reported similar age incidence. Next in the incidence was the

age group 51-60 yrs. Svanes (1993) in their retrospective study between 35-90 showed that median age has increased from 41 to 62 years. This increase in age incidence, between 51-60 years in our study can be explained by the fact that young fit patients are being operated more and more in periphery hospitals and only old/complicated cases are being sent to this referral hospital. Above the age of 50 yrs mortality (25%) and postoperative complications were higher compared to those below 50 yrs (3.5%). Irvin TT (1989) and Blamergain (1997) found the mortality to be 30.35% in elderly patients. The highest incidence of perforation in the poor socio-economic status group (69.4%). This is due to their irregular dietary habits, addictions and lack of health consciousness. Similar observation has been made by Jones (1960) and Brozin (1977). Perforated duodenal ulcers have been classified into acute and chronic on whether there is a history of dyspepsia for less than or more than 3 months (Peel ALG 1981) which has been further modified by taking operative findings of chronicity into account, thus allowing for the fact that duodenal ulcer may be an asymptomatic disease (Bailey & Love 1995). In our series previous ulcer history ranging from 1 to 15 years was present in 57.6% cases. Operative finding of chronicity could not be detected because of severe degree of surrounding inflammation due to late presentation. According to Christopher Watsell (1995), in 60% cases there is often a long history of peptic ulceration. This previous ulcer history decided the further course of surgical management. (Simple closure or definitive treatment). In our study, in majority (63.5%) of the patients duration of perforation ranged from 25-72 hrs. This delay in presentation is due to lack of health consciousness, want of facilities and poor economic status. As the duration of perforation increases it leads to increased severity of peritonitis and poor general condition of the patient. There was no death within 12 hrs which increased to 33.3% by 7 days. Similar increase in mortality & morbidity correlated to increase in

duration of perforation has been reported Bose (1983) & Svanes (1994). Plain x-ray of abdomen done in all cases showed gas under diaphragm in 89.4% cases which is cost effective, easily available and helps in early diagnosis. Majority of perforation (91.7%) were present in the first part of duodenum and size varied from 3-10mm in 82% cases. Mortality and morbidity ranged from 5.7% and 25.7% in case of perforation of 1-5 mm diameter to 15.4% and 77 % in perforation >10 mm respectively, which is slightly less than what shown by Henery (1962). This association may not be absolute because other factors like age, duration of perforation, preoperative shock and associated medical illness also come into play. Culture of peritoneal fluid showed that 56.6% had positive culture and out of which majority (68.8%) had polybacterial flora: amongst them gram-ve culture was highest. This is in contradiction of Du Plessis (1993) series, who found that common organism encountered were gram +ve cocci (47%) and there was no significant bacterial growth even up to 48 hrs. But we found that percentage of +ve culture increased and deterioration of patient's general conditions occurred as time elapsed, leading to increased mortality; 62.5% among all death. Besides age and increased duration of perforation Boey (1987) and Khosrovani (1994) identified two other factors responsible for immediate mortality, namely preoperative shock and coexistent medical illness, Mortality varies between 2.3% and 66.7% to 100% according to absence or presence of these risk factors.^[4] In our series 25.9% patients presented with preoperative shock out of which 36.36% died. In patients having, both cardiovascular and respiratory disease with shock mortality was 100%.

Simple closure with omental patch and peritoneal toileting was the procedure in 54.1% patients with a mortality of 13.0% which higher than that shown by Watkins (1984) and Ananlhakrishnan (1995).^[5] This high mortality is due to the fact that patients having risk factors were taken up for simple closure, where the operating time is less. In these patients undergoing simple closure 43.0% had unsatisfactory results (relapse of ulcer symptoms, haematemesis, pyloric stenosis) within 1 ½ yrs. Out of which 47% required subsequent definitive surgery. Sherlock (1984) and A.K.Dev (1994) after a follow up study of 5 yrs following simple closure found that reoperation was required in 5.6% of survivors of acute ulcer and 30-38% of survivors of chronic ulcer. Whereas George (1991) in his review found recurrence rate up to 77% in those patients having perforation not due to ulcerogenic medication. In our case the follow up period is very short and recurrence rate may increase with increase in duration of follow up as mentioned by Foster (1972).^[6]

Truncal vagotomy with gastrojejunostomy or only gastrojejunostomy was done in 42% of cases taking

stable haemodynamic status into consideration rather than duration of perforation of less than 24 hrs as mentioned earlier by many authors. Out of the 36 patients undergoing definitive surgery in 70% of cases duration of perforation was more than 24 hrs and as high as 4 days with only one (2.6%) mortality which is much lower than results shown by Hewitt (1993) and S.B. Mishra (1982). Till now all the patients are doing well without any recurrence. Since peptic perforation is one of the commonest acute surgical emergency, most of the cases are being handled by emergency staff which consists of Junior residents and Senior Resident Surgeons. It is interesting to see that mortality was 10.5% in the group operated by Junior residents, 7% in the group operated by Senior resident surgeons and maximum of 12.5% in the group operated by consultants. Similar was the observation by S.M.Bose (1983). Since consultants are called on for critical cases it can be inferred that the operating surgeons status has no impact on the ultimate outcome.

Eighty-four cases were treated surgically. Out of the 36 cases treated by definitive surgery 33.3% and out of the 48 cases treated by simple closure 58.3% developed postoperative complication. Most common complication was in the form of wound infection (15%), other complications were fever, chest infection, diarrhoea, post-operative shock, biliary fistula and post-operative obstruction. S.B.Mishra (1982) and R.L.Gupta (1995) report similar type and rate of complication.^[7] Complication rate in the group treated by simple closure was high because they are the ones who have overall poor general condition compounded with risk factors, compared to those treated by definitive surgery. Obviously those with post-operative complication had a prolonged hospital stay. One of the factors which is considered to affect the reported incidence of recurrence is duration of follow up (Janet, 1972).^[8] Our follow up period ranged from 6 months to 2yrs which is quite short to detect actual incidence of recurrence. Recurrence of symptoms may not be due to ulcer, on the other hand recurrent ulcers may remain asymptomatic. Hence Endoscopic follow up is mandatory which is not possible for all patients in our set up because it is not easily available to all and moreover most patients cannot afford due to their poor socio-economic status.

CONCLUSION

The mortality and morbidity were higher in elderly patients with prolonged duration of perforation, increased size of perforation, with presence of pre-operative shock, coexisting medical illness and positive peritoneal fluid culture while status of operating surgeon had no correlation with the outcome. The overall mortality was 9.4%. In the group of 46 patients undergoing simple closure, 19 had unsatisfactory result (recurrence of ulcer

symptoms/hematemesis/ melena/pyloric stenosis) out of which 9 required definitive surgery while in the definitive surgery group all were asymptomatic till date. As the variables like age, perforation size and site, co-existent medical diseases are not changeable; it is early intervention that holds the key to lower the mortality of this otherwise fatal condition. Adequate pre-operative resuscitation to alleviate shock and coverage of broad spectrum antibiotics are a must as presence of preoperative shock and positive peritoneal fluid culture are associated with higher mortality and morbidity.

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